04-27-04 IFW

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF	:	Leonard, et al.
FOR	:	METHOD AND DEVICE FOR PRODUCING AQUEOUS IODINE AND OTHER HALOGEN SOLUTIONS
SERIAL NO.	:	10/059,577
FILED	:	January 29, 2002
EXAMINER	:	MENON, Krishnan S.
ART UNIT	:	1723
CONFIRMATION NO.	:	7926
LAST OFFICE ACTION	:	September 25, 2003
ATTORNEY DOCKET NO .	:	EPEZ 200012

TRANSMITTAL OF
APPEAL BRIEF UNDER 37 C.F.R.§1.192

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant transmits herewith three (3) copies of APPEAL BRIEF UNDER 37 C.F.R.§1.192 for the above-referenced patent application.

CERTIFICATE OF EXPRESS MAILING

I hereby certify that this Transmittal of Appeal Brief Under 37 C.F.R. §1.192 (in triplicate) is being sent by the United States Postal Service as Express Mail procedure and is addressed to Mail Stop – Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450. **Express Mail No. EL998015369 US**

Cathryn Terchek

Date: April 26 2004

A check in the amount of $ 165.00 is enclosed for filing the Brief. If any additional fees are due, the commissioner is authorized to charge Deposit Account No. 06-0308.

Respectfully submitted,

FAY, SHARPE, FAGAN,
MINNICH & MCKEE, LLP

Date: April 26, 2004

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P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Appeal Brief is in furtherance of the Notice of Appeal that was mailed to the U.S. Patent and Trademark Office on March 22, 2004.

The fees required under 37 C.F.R. §1.17 and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying Transmittal of Appeal Brief.

Appellant files herewith an Appeal Brief in connection with the above-identified application wherein claims 1-15, 26, 27, 30, and 31 were finally rejected in the Final Office Action of September 25, 2003. What follows is Appellants' Appeal Brief (in triplicate) in accordance with 37 C.F.R. §1.192(a).

CERTIFICATE OF EXPRESS MAILING

I hereby certify that this Appeal Brief Under 37 C.F.R. §1.192 is being sent by the United States Postal Service as Express Mail procedure and is addressed to Mail Stop – Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450. **Express Mail No. EL998015369 US**

Cathryn Terchek

Date: April 26 2004

I. REAL PARTY IN INTEREST (37 C.F.R. §1.192(c)(1))

The real parties in interest in this appeal are the inventors named in the caption of this brief (John Alex Leonard and Maurice Tinkler).

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. §1.192(c)(2))

Currently, it is believed that there are no other appeals or interferences in process or pending before the U.S. Patent and Trademark Office which the present application bases its priority from, or any cases which base their priority upon the present application, that will directly affect, or will be directly affected by, or will have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS (37 C.F.R. §1.192(c)(3))

The status of the claims set forth after the Advisory Action mailed December 18, 2003 was, and is, as follows:

Allowed: none

Rejected Claims: 1-15, 26, 27, 30, and 31

The present appeal is directed specifically to claims 1-15, 26, 27, 30, and 31.

IV. STATUS OF THE AMENDMENT (37 C.F.R. §1.192(c)(4))

No amendments have been made that have not been entered by the Examiner.

V. SUMMARY OF THE INVENTION (37 C.F.R. §1.192(c)(5))

The present invention is directed to a method of producing an aqueous solution of iodine from iodine vapor transferred across a porous membrane from an iodine source to a receiving medium. In this respect, the process of iodine transfer across the membrane is by vapor permeation through the membrane pores. In one embodiment, the iodine source is solid iodine or an iodine containing liquid (claim 2). The method may include the additional step of passing the iodine vapor through a liquid medium that absorbs the iodine vapor (claim 4). The iodine vapor-permeable membrane may be an inorganic material that is single or multi-ply and have various characteristics (claims 6-13). The iodine vapor may be passed through pores in the permeable material that are less than 5 microns in size. The vessel containing the

iodine may be impermeable and unreactive to iodine (claim 15).

In a second embodiment, there is provided method of preparing an iodine fluid for dietary purposes directly or by blending, including the steps of selecting a porous membrane that is permeable to iodine and water vapor but impermeable to liquids and solids, providing such membrane in the form of an enclosure to contain the source of iodine vapor, providing a source of iodine vapor within the enclosure, providing a vessel that contains a receiving medium for the iodine vapor, controlling a flow of the iodine-receiving medium in the vessel, removing a measured volume of iodine solution from the vessel in a batch or continuous mode, and preparing an iodine fluid for dietary purposes (claim 26). A similar but distinct embodiment provides a method for preparing a fluid for disinfecting, sterilizing and preserving foodstuffs (claim 27).

VI. ISSUES (37 C.F.R. §1.192(c)(6))

Whether claims 1-5, 7, 9, 10, 13, 26, 27, 30 and 31 are unpatentable under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,275,736 to O'Dowd ("O'Dowd").

Whether claim 15 is unpatentable under 35 U.S.C. §103(a) over O'Dowd.

Whether claims 6, 8, 11, 12 and 14 are unpatentable under 35 U.S.C. §103(a) over O'Dowd in view of U.S. Patent No. 4,483,771 to Koch ("Koch").

Whether claims 1-3, 5-14, 26, 27, 30, and 31 are unpatentable under 35 U.S.C. §103(a) over Koch in view of O'Dowd.

VII. GROUPING OF THE CLAIMS (37 C.F.R. §1.192(c)(7))

Not all of the claims at issue, i.e., claims 1-15, 26, 27, 30, and 31 stand or fall together. That is, at least the following claim groups recite separately patentable subject matter: claim 1; claim 6, claim 11; claim 12; and claim 14. This is explained in detail below.

Claim 1, from which the remainder of the rejected claims 2-15 ultimately depend, recites a method for producing an aqueous solution of iodine from iodine vapor transferred across a porous membrane from an iodine source, wherein the porous membrane is permeable to iodine and water vapor but impermeable to

liquids and solids.

With respect to claim 6, which recites that the membrane is an inorganic material, O'Dowd does not disclose such materials. An improper combining of the teachings of O'Dowd and Koch renders this claim patentable, irregardless of whether the Board accepts the Examiner's position that claim 1 is anticipated. Dependent claim 11 recites wherein the porous membrane is a nanostructure. Again, neither O'Dowd nor Koch discloses such a structure. Even if it is deemed by the Board that the Examiner is correct in his rejection of claim 1, claim 11 recites a specific structure for the membrane that is not disclosed or suggested by the cited art. By reciting this material, claim 11 is separately patentable independent of whether the broader claim or claims from which they depend are patentable. Similarly, claims 12 and 14 recite wherein the membrane is perforated and has pores of less than 5 microns, respectively. These characteristics for the membrane are also not disclosed or suggested in the art. Thus, even if it is determined that the prior art discloses or suggests all of the steps in the broader claims, the specific materials of these claims not taught or suggested by the cited art render these claims patentable.

VIII. ARGUMENTS (37 C.F.R. §1.192(c)(8))

A. The Examiner's Rejection of Claims 1-5, 7, 9, 10, 13, 26, 27, 30 and 31 as Being Anticipated by O'Dowd is Erroneous and Must Be Reversed.

The Examiner rejected claims 1-5, 7, 9, 10, 13, 26, 27, 30 and 31 under 35 U.S.C. §102(b) as being anticipated by O'Dowd. Appellants respectfully traverse.

O'Dowd relates to a method of producing an aqueous solution of thermodynamically free iodine in which iodine passes by dispersion through an iodine solving solid barrier until vapor pressure equilibrium is reached. O'Dowd fails to anticipate the present claims for several reasons. First, the iodine in O'Dowd does not pass through the membrane as a vapor, as required by the present claims. As made clear in O'Dowd, the iodine essentially dissolves in the membrane (with the membrane acting as a solvent) and permeates across it. Specifically, O'Dowd states:

> Iodine also has the special property of being soluble in some solids. To iodine, these solids appear to behave as a liquid solvent (in the traditional sense of the properties of a liquid). When iodine is introduced to these solids, the solid is permeated by the iodine, imparting one of the two colors observed when iodine dissolves in liquids...Many of these special solids are impermeable to water and other solvents of iodine. Therefore should a solution containing a quantity of iodine be placed on one side of this solid barrier, and a solvent of iodine be placed on the other side of the solid barrier, the I_2 will move freely back and forth across the barrier until an equilibrium is reached. (col. 4, lines 6-12)

Thus, the iodine in O'Dowd passes through the solid barrier by solubilizing in the solid and diffusing through the barrier rather than passing as a vapor through pores in the membrane.

Second, it is clear in O'Dowd that the iodine does not pass through pores in the membrane, as required by the present invention. In fact, O'Dowd clearly discloses that the membrane used therein is nonporous where he states "a source containing thermodynamically free iodine is introduced on one side of a non-porous barrier." (col. 4, lines 6-16). Further support for this can be found in the block quote above, which recites that the barrier is "solid". Although the Examiner is apparently attempting to equate "porous" with "permeable", there is clearly a patentable distinction between the two as can be seen above.

The present invention, on the other hand, relates to a method of producing an aqueous solution of iodine from iodine vapor transferred across a porous membrane from an iodine source. In this respect, the process of iodine transfer across the membrane is by vapor permeation through the membrane pores, rather than by solubilizing the iodine in the solid barrier as disclosed in O'Dowd. As disclosed in the Background of the present application, the use of a porous membrane allows for an increased rate of iodine permeation through the membrane as compared to the use of solid iodine solving barriers as disclosed in O'Dowd. Because O'Dowd fails to disclose the transfer of iodine vapor across a porous membrane, it fails to anticipate the present claims.

O'Dowd fails to anticipate the claims for the further reason that it fails to disclose a membrane that is permeable to both iodine vapor and water vapor. In this respect, O'Dowd discloses that the barrier for use in his invention is solid and

impermeable except with respect to iodine that can permeate through the membrane by solubilizing in the solid. The membrane thus acts as a solvent to the iodine. Despite the Examiner's arguments to the contrary, there is simply no indication that water vapor is also permeable to the solid barrier of O'Dowd. The Examiner cannot point to one instance in O'Dowd that supports his contention that the solid barrier disclosed therein is permeable to water vapor. In fact, having a solid barrier that was permeable to water vapor would hinder the process described in O'Dowd since the process is driven by the vapor pressure differential of Iodine vapor between the two sides of the barrier. Allowing water vapor to diffuse through the solid barrier would allow the vapor pressure to equilibrate with a reduced transfer of iodine from one side to the other. The Examiner failed to address this point in any of his office actions. For at least these reasons, O'Dowd fails to anticipate the present claims.

B. The Examiner's Rejection of Claim 15 as obvious over O'Dowd Is Erroneous and Must Be Reversed

The Examiner rejected claim 15 under 35 U.S.C. §103(a) as being unpatentable over O'Dowd. Appellants respectfully traverse.

With respect to claim 15, the Examiner states that O'Dowd teaches all the limitations of claim 1. The Examiner states that O'Dowd further teaches a vacuum but is silent on the temperature and the vessel testing. The Examiner believes that it would be obvious to one of ordinary skill in the art that the temperature of O'Dowd's process is the ambient temperature and that one would construct and test the vessels for its operating conditions for safety. Even assuming for purposes of argument that this is true, O'Dowd fails to teach or suggest a porous membrane that is permeable to iodine vapor and water vapor. As discussed above, O'Dowd only discloses a non-porous barrier through which iodine permeates through solubilizing. Thus, O'Dowd fails to disclose or suggest all the elements of claim 15, which is dependent upon and contains all the recitations of claim 1.

C. The Examiner's Rejection of Claims 6, 8, 11, 12 and 14 as Obvious over O'Dowd in View of Koch and Claims 1-3, 5-14, 26, 27, 30 and 31 as Obvious over Koch in View of O'Dowd Is Erroneous and Must Be Reversed

The Examiner further rejected claims 6, 8, 11, 12 and 14 under 35 U.S.C. §103(a) as being unpatentable over O'Dowd in view of Koch. The Examiner further rejected claims 1-3, 5-14, 26, 27, 30 and 31 under 35 U.S.C. §103(a) as being unpatentable over Koch in View of O'Dowd. Appellants respectfully traverse.

Although presented as two separate rejections, the Appellants will consider the above rejections together as they both deal with the impermissible combining of the teachings of O'Dowd and Koch. With respect to these claims, it is the Examiner's position that although O'Dowd fails to teach the recitations in these claims, Koch discloses all of the elements as recited therein and that one skilled in the art would be motivated to combine the teachings of the two references.

Koch discloses a multi-layer filter including a macrofilter layer, including a porous material impregnated with bacteria-destroying medication and a microfilter layer bonded to a side of the macrofilter layer. The filter is useful in the filtering of gas or liquid substrates. The proposed combination of O'Dowd and Koch fails to render the present claims unpatentable for at least the following reasons.

First, there is no motivation to combine the references. To properly combine the references under 35 U.S.C. §103 there must be some motivation, either in the prior art or the knowledge generally available to one skilled in the art, to do so. Here, not only is there no motivation to combine the references. First, the references relate to completely different subject matter. In this respect, O'Dowd relates to a method of providing thermodynamically free iodine. Koch, on the other hand, relates simply to an iodine impregnated filter for blocking the passage of bacteria in a feed liquid. Koch is not concerned with the production of iodine, but simply with the use of iodine for trapping and destroying bacteria. There is no motivation to combine the two references because none of the elements disclosed in the respective references are applicable for use in the other.

Second, the inventions of Koch and O'Dowd actually teach away from there combination. In this respect, and as disclosed above, O'Dowd teaches a non-porous, solid barrier that is impervious to solvents and contaminants of iodine (col. 3, lines 30-38). This includes water (col. 4, lines 17-18). Koch, on the other hand, is drawn to a filter for water, blood and other fluids for removing bacteria from these fluids. Thus, the fluids must pass through the filter in the invention of Koch. Iodine as a bacteria-destroying medication may be impregnated in the filter of Koch. Thus,

Koch discloses a filter in which water and other fluids may freely pass, while the iodine is held within the filter. This is exactly opposite to the solid barrier of O'Dowd which discloses the barrier as being non-porous and nonpermeable to water and other fluids, while allowing iodine to diffuse therethrough. As the Board will appreciate, the proposed combination under 35 U.S.C. §103 can not render the prior art unsatisfactory for its intended purpose, nor can it change the principal of operation of a reference (MPEP §2143.01). Here, the proposed combination of Koch and O'Dowd would render each reference completely unsatisfactory for its intended purpose. Therefore, the proposed combination of Koch and O'Dowd is improper under 35 U.S.C. §103.

Even if the references could somehow be combined, they would still not disclose or suggest all of the elements of the present claims. In this respect, such a proposed combination would fail to disclose or suggest a porous membrane that is permeable to iodine vapor and water vapor, but impermeable to liquids and solids. In this respect, O'Dowd teaches a non-porous membrane that is permeable only to iodine through solubilization, not as a vapor. Koch teaches a porous membrane that is permeable to water and other liquids as well as iodine vapor. The combination of the two would not suggest such a porous membrane as recited in claim 1 of the present application. Further, and with respect to claim 14, Koch fails to disclose transferring iodine vapors through pores. As detailed in column 2, lines 37-41, Koch discloses that iodine may be impregnated into the macrofilter layer. Thus, the iodine is held static in the filter layer and is not transferred or permeated through the filter as disclosed in the present claims.

With respect to claim 6, neither reference discloses or suggests an inorganic material as membrane. In this respect, O'Dowd discloses the use of materials such as linear polyethylene, isotactic polyethylene, polyoxymethylene and polybutylene terephthalate for the membrane (col. 6, lines 33-37). These are all organic materials. Likewise, Koch discloses the use of synthetic plastic materials, including cellulose triacetate, polyester, cellulose esters, polyvinyl chloride, copolymers of polyvinyl chloride, polytetrafluoroethylene, acrylic copolymers and regenerated cellulose. These are also all organic materials. With respect to claim11, neither reference discloses or suggests the use of a nanostructured membrane. With respect to claim 12, neither reference discloses or suggests the

use of a perforated membrane. For at least these reasons, the proposed combination of O'Dowd and Koch fails to render the present claims unpatentable under 35 U.S.C. §103. Applicants respectfully request withdrawal of this rejection.

CONCLUSION

In view of the above, Appellant respectfully submits that claims 1-15, 26, 27, 30, and 31 are not anticipated or rendered obvious by the cited art.

Accordingly, it is respectfully requested that the Examiner's rejections be reversed.

Respectfully submitted,

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Dated: April 26, 2004

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IX. APPENDIX OF CLAIMS (37 C.F.R. §1.192(c)(9))

1. A method of producing an aqueous solution of thermodynamically free iodine from iodine vapor transferred across a porous membrane from an iodine source, comprising the following steps:

selecting a porous membrane that is permeable to iodine and water vapor but impermeable to liquids and solids;

providing a source of iodine vapor;

providing such membrane in the form of an enclosure to contain the source of iodine vapor;

providing a vessel that contains a receiving medium for the iodine vapor; and

permeating iodine vapor across the membrane.

2. The method of claim 1 wherein the iodine source is iodine as an iodine-releasing solid or an iodine-releasing liquid that contains iodine in solution or in a complex form.

3. The method of claim 2 including the additional steps of:

absorbing the iodine vapor in the liquid contained in the vessel;

mixing the iodine vapor with inert gas contained in or flowing through the vessel; and

controlling flow of the receiving medium such that it is either static or moving.

4. The method of claim 3 including the additional step of:

passing the inert gas containing iodine vapor through a liquid medium that absorbs said iodine vapor.

5. The method of claim 1 wherein the iodine vapor-permeable membrane is an organic plastic material.

6. The method of claim 1 wherein the iodine vapor-permeable membrane is an inorganic material.

7. The method of claim 1 wherein the iodine vapor-permeable membrane is single ply.

8. The method of claim 1 wherein the iodine vapor-permeable membrane is multi-ply construction wherein the plies are of the same or different composition and structure.

9. The method of claim 1 wherein the iodine vapor-permeable membrane is a continuous film.

10. The method of claim 1 wherein the iodine vapor-permeable membrane is non-woven.

11. The method of claim 1 wherein the iodine vapor-permeable membrane is a nanostructure.

12. The method of claim 1 wherein the iodine vapor-permeable membrane is perforated.

13. The method of claim 1 wherein the membrane material is substantially non-permeable to solid iodine.

14. The method of claim 13, including the additional step of;

transferring iodine vapor through discrete pores in the membrane of less than 5 microns.

15. The method of claim 1, including the additional steps of:

providing a vessel of a material that is substantially impermeable to iodine vapor and essentially unreactive towards iodine;

maintaining a temperature of the receiving medium in the range of about -10 to 110 degrees Centigrade;

maintaining a pressure in the vessel containing the receiving medium in a range from vacuum to about 5 atmospheres; and

constructing and testing the vessel for the specified pressure rating.

Claims 16 – 25 (withdrawn)

26. A method of preparing an iodine fluid for dietary purposes directly or by blending, comprising the steps of:

selecting a porous membrane that is permeable to iodine and water vapor but impermeable to liquids and solids;

providing such membrane in the form of an enclosure to contain the source of iodine vapor;

providing a source of iodine vapor within the enclosure;

providing a vessel that contains a receiving medium for the iodine vapor; controlling a flow of the iodine-receiving medium in the vessel;

removing a measured volume of iodine solution from the vessel in a batch or continuous mode; and

preparing an iodine fluid for dietary purposes.

27. A method of preparing a fluid for disinfecting, sterilizing and preserving food ingredients, food stuffs, feed ingredients and feedstuffs, comprising the steps of:

selecting a porous membrane that is permeable to iodine and water vapor but impermeable to liquids and solids;

providing such membrane in the form of an enclosure to contain the source of iodine vapor;

providing a source of iodine vapor within the enclosure;

providing a vessel that contains a receiving medium for the iodine vapor; removing a measured volume of iodine solution from the vessel in a batch or continuous mode; and

preparing a fluid for disinfecting, sterilizing and preserving food ingredients, food stuffs, feed ingredients and feedstuffs.

28. (withdrawn)

29. (withdrawn)

30. A method for producing an aqueous solution of a halogen or mixture of halogens, comprising the steps of:

selecting a porous membrane that is permeable to halogen and water vapor but impermeable to liquids and solids;

providing such membrane in the form of an enclosure to contain the source of halogen vapor;

providing a source of halogen vapor within the enclosure; and

providing a vessel that contains a receiving medium for the halogen vapor.

31. The method of claim 30 including the additional steps of:

absorbing the halogen vapor in the liquid contained in the vessel;

mixing the halogen vapor with inert gas contained in or flowing through the vessel; and

controlling flow of the receiving medium such that it is either static or moving.